

CLAIMS

What is claimed is:

1. A zero turn vehicle comprising:
 - 5 a first drive system comprising a first hydraulic pump and a first hydraulic motor, where the first hydraulic pump is connected to the first hydraulic motor through a closed hydraulic loop having a high pressure side and a low pressure side;
a first output axle driven by the first hydraulic motor and connected to one wheel of the vehicle;
 - 10 a second drive system comprising a second hydraulic pump and a second hydraulic motor, where the first hydraulic pump is connected to the first hydraulic motor through a closed hydraulic loop having a high pressure side and a low pressure side;
a second output axle driven by the second hydraulic motor and connected to a second wheel of the vehicle;
 - 15 a first valve located between the high pressure side and low pressure side of the first closed hydraulic loop to reduce the pressure rise rate when the first hydraulic pump is engaged; and
a second valve located between the high pressure side and low pressure side of the second closed hydraulic loop to reduce the pressure rise rate when the second hydraulic
20 pump is engaged.

2. A zero turn vehicle as set forth in Claim 1, further comprising a first valve block in which the first valve is located and a second valve block in which the second valve is located, wherein the first and second valve blocks are mounted in the vehicle separate from the first and second hydraulic pumps.
- 5 3. A zero turn vehicle as set forth in Claim 2, further comprising a first set of hydraulic lines connecting the first valve block to the first hydraulic pump and first hydraulic motor and a second set of hydraulic lines connecting the second valve block to the second hydraulic pump and second hydraulic motor.
4. A zero turn vehicle as set forth in Claim 2, wherein each hydraulic pump and
10 each hydraulic motor is mounted in a separate casing.
5. A zero turn vehicle comprising first and second drive systems mounted in the vehicle so that each drive system independently operates one of the wheels of the vehicle, each drive system comprising a hydraulic pump driving a hydraulic motor through a set of hydraulic lines and a valve block connected to the set of hydraulic lines, wherein each
15 valve block comprises at least one pressure rise rate valve such that hydraulic fluid flowing through the valve moves from the high pressure side of the hydraulic lines to the low pressure side when the pressure rise rate in the high pressure side exceeds a set level.
6. A zero turn vehicle as set forth in Claim 5, wherein each hydraulic pump and each hydraulic motor is mounted in a separate casing.

7. A zero turn vehicle comprising:

first and second drive systems mounted in the vehicle so that each drive system independently operates one of the wheels of the vehicle;

each drive system comprising a hydraulic pump connected to a hydraulic motor
5 through a closed hydraulic loop having a first side and a second side and a valve block connected to the hydraulic loop between the hydraulic pump and hydraulic motor; and

wherein each valve block comprises a pressure rise rate valve so that, when the first side is under pressure, hydraulic fluid will flow from the first side to the second side of the loop, when the pressure rise rate in the first side exceeds a selected level.

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8. A zero turn vehicle as set forth in Claim 7, wherein each valve block further comprises a second pressure rise rate valve so that, when the second side is under pressure, hydraulic fluid will flow from the second side to the first side of the loop, when the hydraulic fluid in the second side reaches a selected pressure level.

15 9. A zero turn vehicle as set forth in Claim 8, wherein each drive system comprises a first casing for mounting the hydraulic pump therein and a second casing for mounting the hydraulic motor therein.

10. A zero turn vehicle as set forth in Claim 9, wherein each drive system further comprising a first set of hydraulic lines connecting the valve block to the hydraulic pump
20 and a second set of hydraulic lines connecting the valve block to the hydraulic motor.